IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	**Confirmation No. 6787**
Tohru HIRAYAMA et al	:	Docket No. 2002-04864
Serial No. 10/089,882	:	Group Art Unit 3625
Filed April 5, 2002	:	Examiner Mila Airapetian

TONED-PAINT ORDER-GIVING AND ORDER-RECEIVING SYSTEM AND AGENT'S SERVER COMPUTER

TRANSLATOR VERIFICATION

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Akiko BUTO, declare and say:

that I am thoroughly conversant in both the Japanese and English languages;

that I am presently residing at Room 301, Ono Bldg., 1-8-5, Botan, Koto-ku, Tokyo, Japan;

that the attached document represents a true English translation of the certified copy of Japanese Patent Application No. 2000-251616 filed August 22, 2000, which I prepared when I was engaged as a translator of Odajima & Co. having the address at Nippon Jitensha Bldg., 9-15, Akasaka 1-chome, Minato-ku, Tokyo, Japan.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 4th day of November, 2005.

Akiko Buto

Akiko BUTO

(TRANSLATION)

JAPAN PATENT OFFICE

This is to certify that the annexed is a true copy of the following application as filed with this Office.

Date of Application : August 22, 2000

Application Number: Patent Application No. 2000-251616

Applicant(s) : Kansai Paint Co., Ltd.

August 31, 2001

Kozo OIKAWA

Commissioner,
Japan Patent Office

Certification Number 3078777/2001

[Document Name] Patent Application

[Reference Number] 10197

[Submitted to] Commissioner, Patent Office

[International Classification] G01N 21/47

[Inventor]

[Address] c/o Kansai Paint Co., Ltd., 17-1, Higashiyawata 4-chome, Hiratsuka-shi, Kanagawa-ken

[Name] Tohru HIRAYAMA

[Inventor]

[Address] c/o Kansai Paint Co., Ltd., 17-1, Higashiyawata 4-chome, Hiratsuka-shi, Kanagawa-ken

[Name] Shinichi GAMOU

[Applicant]

[Identification Number] 000001409

[Name] Kansai Paint Co., Ltd.

[Representative] Tamotsu SHIRAIWA

[Indication of Official Fees]

[Number of Prepayment] 000550

[Amount of Payment] 21000

[List of Submitted Objects]

[Name of Object] Specification 1

[Name of Object] Drawings 1

[Name of Object] Abstract 1

[Proofing] Required

[Document Name] Specification

[Title of the Invention] Toned-Paint Order-Giving and Supplying Method

[Claims]

[Claim 1] A paint order-giving and supplying method including:

(1) a step of allowing a paint orderer to input a toning job including the colorimetric data of a reference color with which the color of a paint should be matched through toning and the data of the type and a necessary quantity of the paint to a computer terminal;

(2) a step of selecting a toning person, connecting the said computer terminal to a computer of the selected toning person, and transmitting the said toning job to the selected toning person to give an order for the toning job to the toning person;

(3) a step of allowing the toning person to communicate the order-receiving approval of the toning job to a paint orderer and to prepare a toned paint mached with the toning job; and

(4) a step of supplying the said toned paint from the toning person to the paint orderer.

[Claim 2] The method according to Claim 1, characterized by further inputting a toning class to the computer terminal in the above step (1).

[Claim 3] The method according to Claim 1 or 2, characterized by retrieving order backlogs of a plurality of toning persons by a computer system and selecting a toning person out of the retrieval contents in the above step (2).

[Claim 4] The method according to Claim 1 or 2, characterized by opening the said toning job to a plurality of toning persons by a computer system, accepting tenders by the computer system, and selecting a toning person out of the toning persons in accordance with a tender result in the above step (2).

[Claim 5] The method according to any one of Claims 1 to 4, characterized by including step (2a) of the following: allowing a toning person to estimate an allowable limit of toning by a designated type of paint through the computer toning using a color-matching computation logic about the content of a toning job, to transmit the data of an allowable limit of toning by the designated type of paint to a computer terminal of a paint orderer when it is difficult to prepare a toned paint by the toning job, and to receive the approval of change to a toning

job within the said allowable limit of toning from the said paint orderer, after the above step (2); and characterized in that the toning person prepares a toned paint corresponding to the change-approved toning job in the above step (3).

[Claim 6] The method according to any one of Claims 1 to 5, further including (5) a step of allowing a painter to prepare a test paint plate by painting the plate with the toned paint supplied by the above step (4), to obtain the colorimetric data of the said test paint plate, to compare the colorimetric data of the test paint plate with a reference color, and to determine whether the criterion of the toning end point is satisfied.

[Claim 7] The method according to Claim 6, characterized by repeating step (6) of the following when the criterion of the toning end point is not satisfied in the above step (5): displaying a painting condition which may satisfy the criterion of the toning end point by the said computer, and allowing a painter to prepare a test paint plate again by test-painting the plate with a toned paint in the same step as the above step (5) under the said painting condition, to compare the colorimetric data of the said test paint plate with a reference color by a computer, and to determine whether the criterion of the toning end point is satisfied; until the criterion of the toning end point is satisfied.

[Claim 8] The method according to Claim 6 or 7, characterized in that a computer determines that the criterion of the toning end point is satisfied by comparing the colorimetric data of a test paint plate with a reference color and then a painter performs full-scale painting.

[Detailed Description of the Invention]

[0001]

[Technical field to which the invention belongs]

The present invention relates to a toned-paint order-giving and supplying method to be executed through a computer.

[0002]

[Prior art and its problem]

Conventionally, when performing repair painting of a perfectly-finished paint film such as an automobile paint film, a toned paint has been prepared in a repair-painting site such as an automobile repair-painting factory and provided for repair painting in general. Therefore, in the repair-painting

site, it has been necessary to keep primary-color paints for toning and manage stocks, secure expert toning persons, and set a computer toning system. Moreover, there have been problems that even if the computer toning system is set, paint attaches to the painting site and the painting site is easily contaminated, and if cleaning is insufficient, computer toning cannot be accurately performed.

[0003]

Moreover, when a painter (paint orderer) has given an order for a toned paint to a toning person, because it has been necessary to send a reference plate for toning a color from the painter to the toning person, there have been problems of time loss and transport cost and therefore, a quick paint-order-giving method advantageous in cost has been requested.

[0004]

An object of the present invention is to provide a quick and cost-advantageous toned-paint order-giving and supplying method capable of separating a toning operation from a repair-painting site, eliminating the toning operation from the painting site, separately obtaining a toned paint, and providing the paint for painting. Another object of the present invention is to eliminate the toning operation from the repair-painting site and solve the above problems on toning.

[0005]

[Means to solve the problems]

The present inventors found that the above objects can be achieved by the following fact: a paint orderer (painter) gives an order for a toning job to a selected toning person through a computer terminal, and the toning person receiving the order prepares and supplies a toned paint; and thus, they completed the present invention.

[0006]

That is, the present invention provides a paint ordering-giving and supplying method including:

(1) a step of allowing a paint orderer to input a toning job including the colorimetric data of a reference color with which the color of a paint should be matched through toning, and the data of the type and a necessary quantity

of the paint to a computer terminal;

(2) a step of selecting a toning person, connecting the said computer terminal to the computer of the selected toning person, and transmitting the said toning job to the selected toning person to give an order for the toning job to the toning person;

(3) a step of allowing a toning person to communicate the order-receiving approval of the toning job to the paint orderer and to prepare a toned paint matched with the toning job; and

(4) a step of supplying the said toned paint from the toning person to the paint orderer.

[0007]

Moreover, the present invention provides the above method further including step (2a) of the following: allowing a toning person to estimate an allowable limit of toning by a designated type of paint through computer toning using a color-matching computation logic about contents of a toning job, to transmit the data of the allowable limit of toning by the designated type of paint to a computer terminal of a paint orderer, and to receive the approval of change to a toning job within the allowable limit of towing by the designated type of paint from the paint orderer, after the above step (2); and characterized in that the toning person prepares a toned paint suitable for the change-approved toning job in the above step (3).

[0008]

Furthermore, the present invention provides the above method further including (5) a step of allowing a painter to prepare a test paint plate by test-painting the plate with the toned paint supplied by the above step (4), to obtain the colorimetric data of the test paint plate, to compare the colorimetric data of the test paint plate with a reference color, and to determine whether the criterion of the toning end point is satisfied.

[0009]

The present invention also provides the above method characterized by repeating step (6) of the following when a criterion of the toning end point is not satisfied in the above step (5): displaying painting conditions which may satisfy the criterion of the toning end point by the above computer, and allowing

a painter to prepare a test paint plate again by test-painting the plate with a toned paint in the same step as the above step (5) under the said painting conditions, to compare the colorimetric data of the said test paint plate with a reference color by the computer, and to determine whether the criterion of the toning end point is satisfied; until the criterion of the toning end point is satisfied.

[0010]

Furthermore, the present invention provides the above method characterized in that a computer compares the colorimetric data of a test paint plate with a reference color and determines that the criterion of the toning end point is satisfied, and then, a painter performs full-scale painting.

[0011]

[Mode for carrying out the invention]

A toned-paint order-giving and supplying method of the present invention includes the first invention method and the second invention method. First, the first invention method is described below.

The first invention method includes the following steps (1) to (4).

[0012]

Step (1)

Step (1) is a step of allowing a paint orderer such as a repair painter to input the colorimetric data of a reference color with which the color of a paint should be matched through toning, the type of the paint, and a necessary quantity of the paint, and if necessary, the date of delivery, the gloss of a paint film, micro-brilliant-feeling data, and a toning class to a computer terminal.

[0013]

In the case of repair painting such as automobile repair painting, when forming a paint film by painting a toned paint, it is necessary that the difference between colors of the paint film of a repair painting portion and the paint film nearby the repair painting portion cannot be easily visually observed. Therefore, it is usually preferable that the above reference color is the color of the surface of a paint film nearby the repair painting portion.

[0014]

It is allowed that the colorimetric data of a reference color is the data measured by a colorimeter that performs measurement at one angle. However,

it is more preferable to use the data measured by a multi-angle colorimeter because it is possible to obtain higher-accuracy data.

[0015]

A paint color is measured by a multi-angle colorimeter under two or more angular conditions, that is, different incident angles of measuring light or different light-receiving angles each of which is an angle formed between a mirror reflection axis and a light-receiving axis. The mirror reflection axis is an axis for forming a reflection angle when an incident angle is equal to the reflection angle such as an axis having a reflection angle of 45° when an incident angle is equal to 45°.

[0016]

To change light-receiving angles, the angular conditions are not restricted. However, the following angular conditions are preferable because it is possible to easily correspond to visual determination of a color: in the case of two angular conditions, the above light-receiving angles must be equal to one angle in the range between 15° and 30° and one angle in a range between 75° and 110°; in the case of three angular conditions, the above light-receiving angles must be equal to one angle in a range between 15° and 30°, one angle in a range between 35° and 60°, and one angle in a range between 75° and 110°; and in the case of four angular conditions, the above light-receiving angles must be equal to one angle in a range between 15° and 30°, one angle in a range between 35° and 60°, one angle in a range between 70° and 80°, and one angle in a range between 90° and 110°.

[0017]

It is allowed that measured values (angular criterion measured values) obtained by measuring the above reference color under various angular conditions are any values as long as the values can specify a color, that is, the values can show or compute lightness, chroma, and hue. For example, the values can be shown by the XYZ color system (X, Y, and Z), the L*a*b * color system (L*, a, and b * values), Hunter Lab color system (L, a, and b values), L*C*h color system (L* value, C* value, and h value) specified in the CIE (1994), or Munsell color system (H, V, and C). Above all, the display according to the L*a*b* color system or L*C*h color system is generally used for the color display

in industrial fields including the automobile repair painting field.

[0018]

The gloss of a paint film input according to necessity, which is described previously, is measured according to necessity when it is a frosting paint film, which shows the specular gloss specified in JIS K-5400 7.6 (1990) and can be measured by a glossimeter at various light reflection angles.

[0019]

The micro-brilliant-feeling data input according to necessity, which is also described previously, is input according to necessity in the case of the color of a paint having a brilliant feeling and containing a brilliant material: a brilliant pigment having a glittering feeling and an interference action such as scaly aluminum powder, deposited aluminum powder, colored aluminum powder, mica-like iron oxide, mica powder, metal-oxide-covered mica powder, metal-oxide-covered silica flake or brilliant graphite; or metallic powder such as copper pigment. The micro-brilliant feeling denotes a specific brilliant texture revealed in the color of a paint containing a brilliant material such as aluminum powder or brilliant mica powder.

[0020]

It is possible to measure the micro-brilliant-feeling data by, for example, a micro-brilliant-feeling measuring instrument, and moreover, compare micro-brilliant-feeling sample-color tags with a reference color, select a color tag having a very-similar micro-brilliant feeling, and obtain the micro-brilliant-feeling data of a purposed paint film from the color tag. The micro-brilliant-feeling sample-color tags can be sample-color tags in which color tags are systematically arranged in the paints. The color tags are obtained by the following: brilliant-material-containing paints are prepared by changing qualities, particle diameters and blending quantities of brilliant materials, and by blending the materials; the brilliant-material-containing paints thus obtained are applied to a substrate; and the substrate are dried.

[0021]

As specific examples of the micro-brilliant-feeling sample-color tags, it is possible to use a booklet and cards showing paint colors of domestic and foreign automobiles classified every fiscal year and automobile maker.

[0022]

Because micro-brilliant-feeling data, color numbers, or color names are entered in micro-brilliant-feeling sample-color tags, it is possible to extract micro-brilliant-feeling data from the color numbers or color names. Various types of micro-brilliant-feeling data are considered. The present inventors described in the specification of Japanese Patent Application No. 28414/2000 that micro-brilliant feelings were well matched each other when two micro-brilliant-feeling parameters such as a parameter "MGR" showing particle feeling (perception emitted from irregular non-oriented pattern [random pattern] caused by orientation and overlap of brilliant pigments in paint film) and a parameter "MBV" obtained by digitizing a glittering feeling (perception of irregular fine brightness caused by light regularly-reflected from brilliant pigments in paint film) coincided with each other. Though it is not restricted, these parameters can be preferably used as micro-brilliant-feeling data.

[0023]

The above toning class input according to necessity decides a matching degree of a toned-paint color to a reference color (allowable range), and it is possible to change prices of a toned paint in accordance with a toning class. A toning class can be, for example, a color difference between the colorimetric data of a reference color and the paint-color data of a toned paint plate formed by a toned paint.

[0024]

A paint orderer inputs the colorimetric data of the above reference color, the type and a necessary quantity of the toned paint, and if necessary, the gloss of a paint film, micro-brilliant-feeling data, and a toning class to a computer terminal.

[0025]

Before entering a toning job, a paint orderer can estimate an allowable limit of toning by a designated type of paint in accordance with computer toning using a color-matching computation logic about the colorimetric data of the above reference color, and when it may be difficult to prepare a purposed toned paint with the designated type of paint, the paint orderer can change the colorimetric data of the above reference color in the toning job to

data within an allowable limit of toning by the designated type of paint or change types of paints, and the type of paint. The computer toning using the above color-matching computation logic can be performed by a computer toning function installed in the computer of the paint orderer, and moreover, it is possible to use the computer toning function of a server computer by connecting the computer of the paint orderer to the server computer.

[0026]

Step (2)

Step (2) is a step of allowing a paint orderer to select a toning person and to give an order for a toning job to the selected toning person.

For a paint orderer to select a toning person, it is possible to use either of the methods described in the following items (a) and (b).

(a) A method of retrieving order backlogs of a plurality of toning persons by a computer system and selecting a toning person out of the retrieved contents. The above order-backlog data is updated at any time or regularly whenever the data is changed.

(b) A method of opening a toning job to a plurality of toning persons by a computer system, accepting tenders by the computer system and selecting a toning person in accordance with a tender result.

[0027]

An order for a toning job is given to the toning person selected as described above by appending the following according to necessity: the data of an allowable limit of toning by and blending of a designated type of paint through the computer toning using the colorimetric data of a reference color, the type and a necessary quantity of the paint, and if necessary, the date of delivery, the gloss of a paint film, micro-brilliant-feeling data, toning class, and a color-matching computation logic.

[0028]

An order for a toning job is given by connecting the computer of a paint orderer to that of a toning person. In the case of the above method (a), it is generally necessary to append the above data when giving an order for a toning job. In the case of the above method (b), when the above data is opened to the public together with a toning job by a computer system, it is

allowed to omit the appendance of the colorimetric data of the above reference color when giving an order for the toning job.

[0029]

Step (3)

Step (3) is a step of allowing a toning person to communicate the order reception approval of a toning job to a paint orderer and to prepare a toned paint.

A toning person checks in the above step (2) whether an error or the like is present in a toning job transmitted from a paint orderer according to necessity. If an error is present, the toning person communicates the error to the paint orderer to obtain a correct toning job. When occasion demands, the toning person can decline the toning job. A method for a toning person to approve order reception of a toning job for a paint orderer is not restricted. However, it is possible to preferably approve order reception by transmitting the order reception approval through a computer.

[0030]

The toning person can prepare a toned paint matched to the above toning job whose order is approved in accordance with a conventionally-publicly- known paint toning method.

[0031]

To prepare a toned paint, it is also possible to previously decide a toning-end-point allowable range in accordance with a toning class or the like and display that a computer toning system is present at the toning end point when a measured value of a toned paint plate comes into a toning-end-point allowable range.

[0032]

Moreover, it is preferable to obtain the colorimetric data of a toned paint plate painted with a final toned paint prepared for toning, painting conditions when preparing the toned paint plate, and if necessary, the gloss of a paint film and micro-brilliant-feeling data.

[0033]

Step (4)

Step (4) is a step of supplying the toned paint obtained in the above

step (3) to a paint orderer. To supply the paint to the paint orderer, it is possible to append the following according to necessity: a toned paint plate painted with a final toned paint, the colorimetric data of the said toned paint plate, painting conditions when preparing the toned paint plate, the gloss of a paint film, micro-brilliant- feeling data, and the data for an MSDS according to paint blending and safety indication. To supply the toned paint to the paint orderer, it is possible to preferably use a home delivery service of packages.

[0034]

Then, the second invention method is described below.

The second invention method is a method including the change of toning jobs when it is difficult to prepare a toned paint according to a toning job in step (2) of the above first invention method. The second invention method is the same as the first invention method except that the following step (2a) is included after step (2), and a toning job whose order is given to a selected toning person in step (3) is used as the change-approved toning job in the following step (2a). When the change of the toning job cannot be approved, it is possible to decline the toning job. The second invention method is usually performed when an allowable limit of toning by a designated type of paint is not previously estimated in step (1) of the first invention method about the colorimetric data of a reference color through the computer toning using a color-matching computation logic.

[0035]

Step (2a)

Step (2a) is a step of allowing a toning person to estimate an allowable limit of toning by a designated type of paint through the computer toning using a color-matching computation logic about the content of a toning job, to transmit the data of the allowable limit of toning by the designated type of paint to a computer terminal of a paint orderer when it is difficult to prepare a toned paint by the toning job, and to receive the approval of change to a toning job within the allowable limit of toning. Before computer-toning the content of the toning job sent from the paint orderer, the toning person checks whether an error is present in the toning job in the above step (2) according to necessity. If an error or the like is present, the toning person can communicate the error to

the paint orderer and obtain a correct toning job.

[0036]

In the case of the second invention method, the toning person prepares a toned paint suitable for the change-approved toning job in step (3) after the above step (2a).

[0037]

The second invention method includes the same steps as steps (3) and (4) of the first invention method after the above step (2a).

[0038]

It is possible to include the following step (5) after step (4) in both the above fist and second invention methods, according to necessity.

[0039]

Step (5)

Step (5) is a step of determining a toned paint supplied by the above step (4). That is, step (5) is a step of allowing a painter (usually, a paint orderer or a person to whom painting is requested from the paint orderer) to prepare a test paint plate by test-painting the plate with the supplied toned paint, to obtain the colorimetric data of the test paint plate, to compare the colorimetric data of the test paint plate with a reference color by a computer, and to determine whether the criterion of the toning end point is satisfied. This test painting simulates the full-scale painting, and therefore, the test painting must be test painting capable of reproducing a paint color in the full-scale painting. Painting conditions for the test painting are not restricted, but the conditions can be standard painting conditions when performing painting with the above paint. For example, it is preferable that the above conditions are the same as the painting conditions when preparing the toned paint in the above step (3).

[0040]

Moreover, the colorimetric data of a reference color used to determine whether a test paint plate satisfies the criterion of the toning end point is the colorimetric data of a reference color for a toning job. For determination, it is also possible to use the data obtained by measuring a reference plate again for convenience' sake. The colorimetric data of a test paint plate is compared with a reference color by a computer to determine

whether the criterion of the toning end point is satisfied. The criterion for determination can be, for example, a criterion (toning class or the like) of the toning end point agreed by both a paint orderer and a toning person.

[0041]

When a determination result in the above step (5) does not satisfy the criterion of the toning end point, the following step (6) is executed. However, it is impossible to satisfy the criterion of the toning end point even by step (6), it is possible to make the toning person perform toning again.

[0042]

Step (6)

Step (6) is a step of allowing a computer to display painting conditions for satisfying the criterion of the toning end point; and allowing a painter (usually, a paint orderer or person to whom painting is requested from the paint orderer) to prepare a retest paint plate by test-painting the plate with a toned paint in the same step as the above step (5) under the said painting conditions, to compare the colorimetric data of a retest paint plate with a reference color by a computer, and to determine whether the criterion of the toning end point is satisfied. When a determination result in step (6) does not satisfy the criterion of the toning end point, it is possible to repeat step (6) until the criterion is satisfied. Moreover, when it is impossible to satisfy the criterion of the toning end point even by step (6), it is possible to make a toning person perform re-toning.

[0043]

Painting conditions for satisfying the above criterion of the toning end point include a dilution ratio (painting viscosity) by a solvent, a spray air pressure for spray painting, a distance between a nozzle of a spray gun and a painted material, an attached quantity of a paint, and a setting time after painting, and it is possible to obtain the above conditions in accordance with the paint-color change data due to the fluctuation of the painting conditions of the toned paint. Moreover, it is possible to obtain the above painting conditions in accordance with the paint-color change data due to the fluctuation of painting conditions of the same type of a paint of a similar color having been accumulated so far instead.

[0044]

Also in both the first and second invention methods, it is possible to perform full-scale painting after step (4). However, it is preferable to perform full-scale painting under predetermined painting conditions after it is determined that the criterion of the toning end point is satisfied in the above step (5) or (6).

[0045]

[Examples]

The present invention is more specifically described below by referring to examples. However, it is not restricted to these examples.

[0046]

Fig. 1 to be described later is a schematic illustration showing a toned-paint order-giving and supplying method of the present invention. The toned-paint order-giving and supplying method of the present invention is described in accordance with Fig. 1.

[0047]

In Fig. 1, a paint orderer inputs the following to the computer terminal of the paint orderer: actual-automobile colorimetric data obtained by measuring the color of an actual automobile (colorimetric data of a reference color) to be repair-painted, and toning jobs such as the type and a necessary quantity of a paint to be used for painting.

[0048]

The paint orderer selects a toning person to whom an order for the toning jog will be given and gives an order for each toning job to the selected toning person. In this case, order backlogs of a plurality of toning persons can be retrieved from a computer of a toning person, and a toning person can be selected in accordance with the retrieval result. An order for a toning job is given by connecting a computer terminal of a paint orderer to a computer of the selected toning person. The toning person receiving the order for the toning job transmits whether to approve order receiving of the toning job to the computer terminal of the paint orderer. When the paint orderer receives from the toning person that the order is not received, the paint orderer can select another toning person.

[0049]

When approving the order reception, the toning person checks whether any error is present in the toning job to confirm that no error is present. If an error is present, the toning person communicates the error to the paint orderer and corrects the toning job.

[0050]

It is preferable that a plurality of paint blendings, color data and micro-brilliant-feeling data corresponding to the said paint blendings, and color characteristic data and micro-brilliant-feeling data of a plurality of primary-color paints are entered in a computer of the toning person, and the computer has a computer toning function in which a color-matching computation logic using the said paint blendings and these data values works. It is also allowed that the computer of the toning person is a computer capable of using a computer toning function in which a color-matching computation logic works by connecting the computer to a server computer on-line.

[0051]

After error checking, the toning person obtains the data of an allowable limit of toning by a designated type of paint about the actual-automobile colorimetric data of the toning job, in accordance with the computer toning function using a color-matching computation logic, according to necessity. When change of toning jobs is necessary in accordance with the data of an allowable limit of toning, the toning person transmits the data of an allowable limit of toning by a designated type of paint to a computer terminal of the paint orderer and obtains the approval of change to a toning job within the toning allowable limit from the paint orderer.

[0052]

Then, the toning person receiving the order prepares a toned paint corresponding to the content of the toning job and supplies the prepared toned paint to the paint orderer by a home delivery service of packages or the like.

[0053]

The paint orderer serves as a painter or asks a painter to examine whether the color of the toned paint supplied from the toning person matches with a reference color (confirmation painting). After confirming that the color

matches with the reference color, an actual automobile is painted with the toned paint.

[0054]

Fig. 2 is an illustration showing a flow of operations performed by a paint orderer in steps (1) and (2).

The paint orderer measures the reference color around a repair-painting portion of an automobile to be repair-painted and inputs a toning job including the following: the type and a necessary quantity of a paint to be applied, and if necessary, the gloss of a paint film, micro-brilliant-feeling data, a toning class and date of delivery; with the measured colorimetric data to a computer of the paint orderer.

[0055]

Moreover, the paint orderer selects a toning person to whom an order for the toning job will be given. To select a toning person, it is possible to use the following method: a method of selecting a toning person through computer retrieval in accordance with the delivery state between a toning person and a paint orderer, the order backlog of the toning person, toning class and date of delivery (method 1); or a method of opening a toning job to a plurality of toning persons, tendering for the toning job by a computer system and selecting a toning person in accordance with the tendering result (method 2). Then, the toning job is transmitted and order-given to the selected toning person through a line by connecting the computer system to a computer of the toning person.

[0056]

Fig. 3 is an illustration showing a flow of operations performed by a toning person receiving an order for a toning job when approving the order reception.

The toning person communicates approving the order for the toning job to a paint orderer by transmitting the approval to a computer of the paint orderer. The toning person prepares a toned paint corresponding to the content of the toning job and prepares a toned paint plate. Then, the person determines the color of the prepared toned paint plate, continues toning until a measured value of the toned paint plate comes into a predetermined

toning-end-point allowable range in accordance with a toning class, and prepares a toned paint. The toning-end-point allowable range can be controlled in accordance with a measured value of a reference color in a toning job, and a toning person can determine acceptance or rejection in accordance with whether a measure value is present in the toning-end-point allowable range. It is also possible to perform determination of acceptance or rejection by making a computer display the toning end point when the measured value of a toned paint plate comes into the toning-end-point allowable range. A toned paint accepted through color determination is sent to a paint orderer by a home delivery service of packages together with the colorimetric data and micro-brilliant-feeling data of a final toned paint plate, painting condition data for toning and paint safety information (MSDS).

[0057]

Fig. 4 is an illustration showing a flow of operations performed by a painter (usually, a paint orderer or a person to whom painting is requested from the paint orderer) when examining a toned paint supplied from a toning person, according to necessity, in a toned-paint order-giving and supplying method of the present invention.

The painter prepares a test paint plate by usually painting the plate with a supplied toned paint by a toning person in accordance with attached painting conditions, compares the colorimetric data of the test paint plate with a reference color by a computer, and determines whether the criterion of the toning end point is satisfied. When a color is not present in an acceptance range, the painter prepares a test paint plate again by changing the painting conditions to painting conditions that may come into the acceptance range. To change painting conditions, it is possible to obtain the information of change portions of the painting conditions from differences of L, a, and b values between the colorimetric data of the test paint plate and the reference color, by connecting the colorimetric data of the test paint plate to a server computer accumulating color changing data by the painting conditions. When color determination is accepted by repeating the above operation, an actual automobile can be painted with the toned paint.

[0058]

[Effect of the invention]

According to a toned-paint order-receiving and supplying method of the present invention, it is unnecessary for a repair painter to perform possession of primary-color paints, inventory control and toning operations which have been performed by a repair painter so far, and it is possible to cut off toning operations and provide a quick cost-advantageous toned-paint order-giving and supplying method. Moreover, because the repair painter does not have to perform toning operations, it is unnecessary to secure an expert toning person, the inventory space of primary-color paints becomes empty, and therefore, this is advantageous from the viewpoint of legal restriction for safety.

[0059]

Moreover, according to the present invention method, a paint orderer (repair painter) can receive a toned paint from a toning person suitable for a purposed toning job out of a plurality of toning persons.

[Brief Description of Drawings]

[Fig. 1]

This is a schematic illustration showing a toned-paint order-giving and supplying method of the present invention.

[Fig. 2]

This is an illustration showing a flow of operations to be performed by a paint orderer in steps (1) and (2) of the method of the present invention.

[Fig. 3]

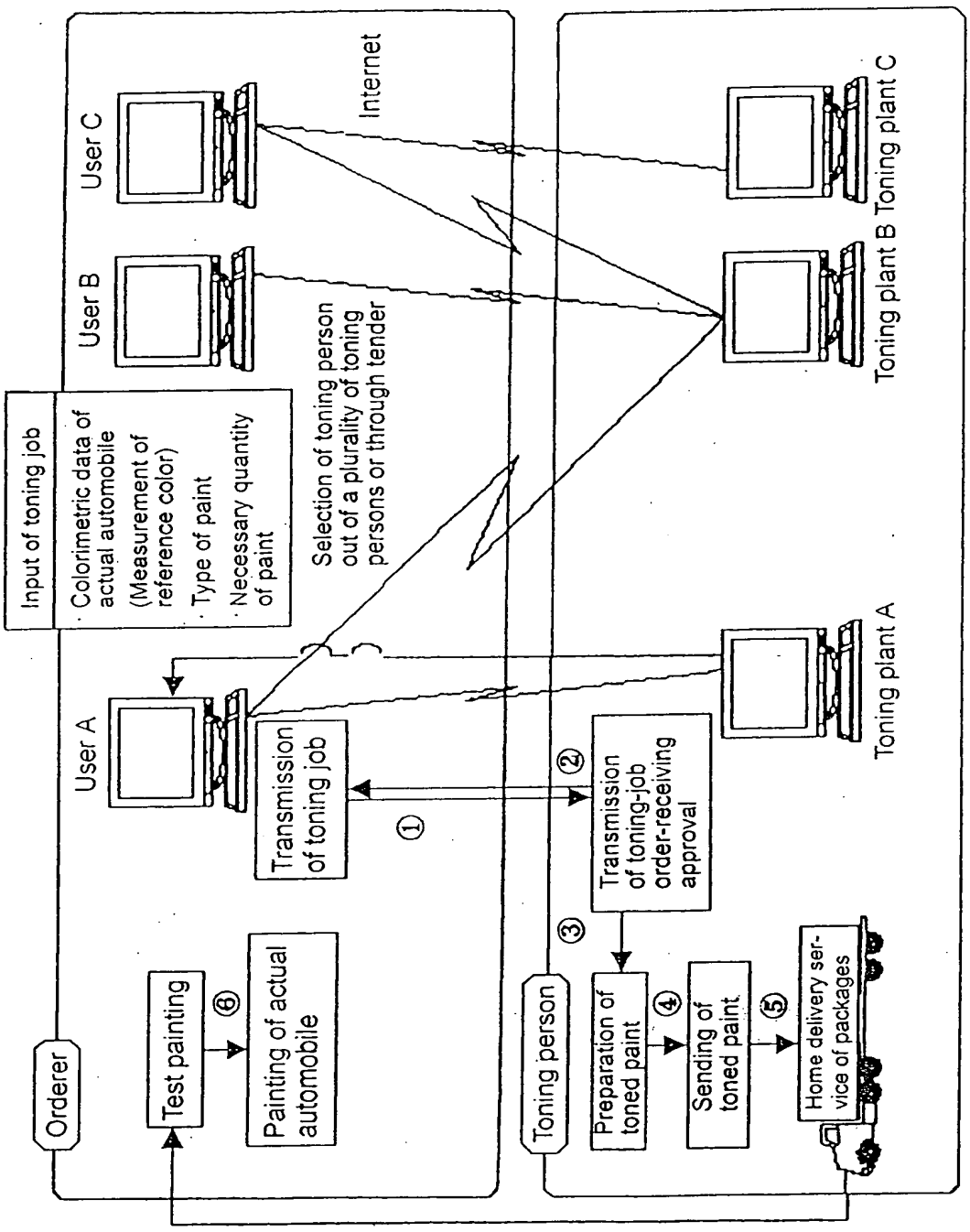
This is an illustration showing a flow of operations to be performed by a toning person receiving an order for a toning job.

[Fig. 4]

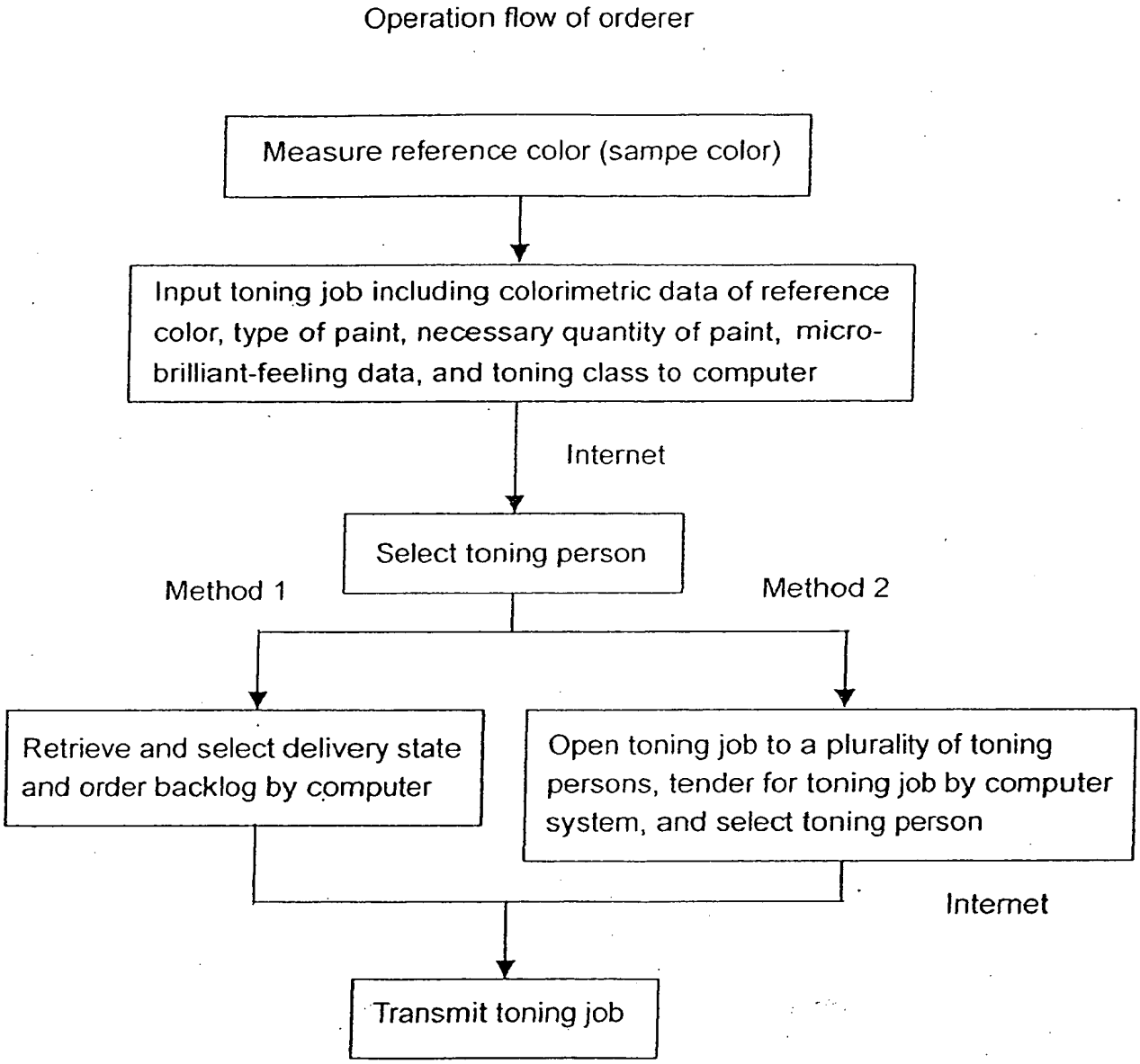
This is an illustration showing a flow of operations to be performed by a painter when examining a toned paint supplied from a toning person.

[Document Name] Drawings

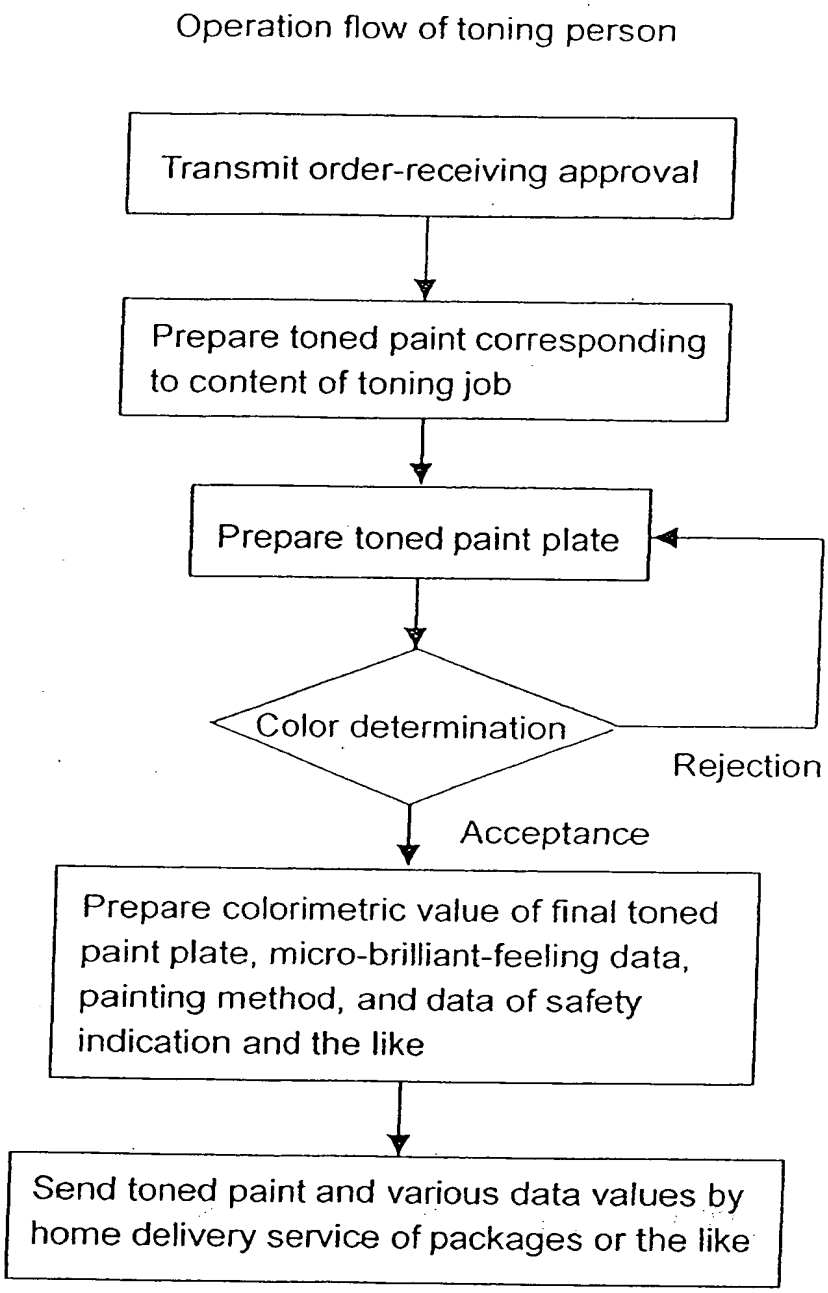
[Fig. 1]



[Fig. 2]

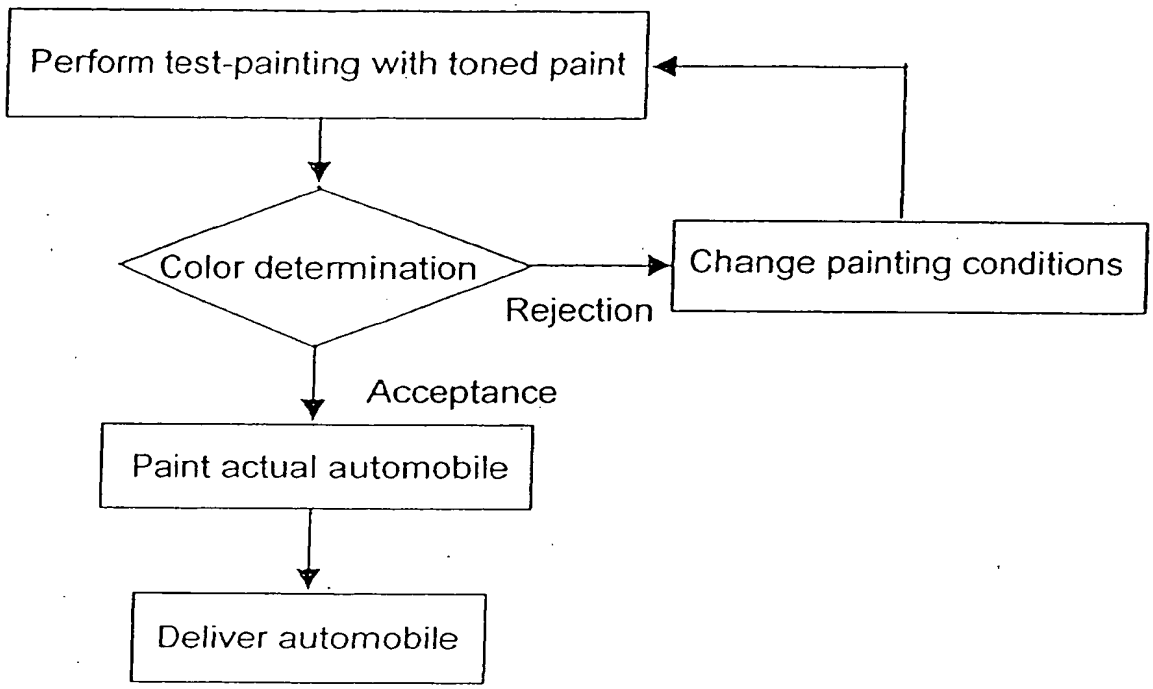

Operation flow of orderer
Measure reference color (sampe color)
Input toning job including colorimetric data of reference color, type of paint, necessary quantity of paint, micro-brilliant-feeling data, and toning class to computer
Internet
Select toning person
Method 1
Method 2
Retrieve and select delivery state and order backlog by computer
Open toning job to a plurality of toning persons, tender for toning job by computer system, and select toning person
Internet
Transmit toning job

[Fig. 3]


Operation flow of toning person
Transmit order-receiving approval
Prepare toned paint corresponding to content of toning job
Prepare toned paint plate
Color determination
Rejection
Acceptance
Prepare colorimetric value of final toned paint plate, micro-brilliant-feeling data, painting method, and data of safety indication and the like
Send toned paint and various data values by home delivery service of packages or the like

[Fig. 4]

Operation flow of painter (Orderer)



[Document Name] Abstract

[Abstract]

[Subject]

The present invention provides a quick and cost-advantageous toned-paint order-giving and supplying method capable of separating a toning operation from a repair-painting site, eliminating the toning operation from the painting site, separately obtaining a toned paint and providing the paint for painting.

[Means for Solution]

A paint ordering-giving and supplying method including:

(1) a step of allowing a paint orderer to input a toning job including the colorimetric data of a reference color with which the color of a paint should be matched through toning and the data of the type and a necessary quantity of the paint to a computer terminal;

(2) a step of selecting a toning person, connecting the above computer terminal to the computer of the selected toning person, and transmitting the above toning job to the selected toning person to give an order for the toning job to the toning person;

(3) a step of allowing a toning person to communicate the order-receiving approval of the toning job to the paint orderer and to prepare a toned paint matched with the toning job; and

(4) a step of supplying the above toned paint from the toning person to the paint orderer.

[Selected Drawing]

Fig. 1